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STUDY OF KOCH'S TREATMENT IN BERLIN.

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Gentlemen,—The subject of my report indicates that the work referred to was carried out in the chief centre where the lymph cure is being tested, but as the field in London is secondary only to Berlin in this respect, I will also venture to give a few facts concerning the work done in the English capital.

The most portentous struggle ever witnessed in the history of the world is to-day in active progress. It is not, however, the hand of man raised against his fellow-man, but the mighty hand of science arrayed against the most relentless foe of mankind.

In the hospitals of the civilized world, in the silent wards, beside the couch of suffering thousands, the battle is being fought with the hypodermic syringe as the weapon charged with the minutest portions of a potent fluid, discovered by one who has well deserved of his profession.

Speaking generally, I think it may be safely said that the evidence furnished us throughout Europe up to the present time regarding the Koch remedy ranges all the way between what is contradictory and conflicting to the point where the results are both brilliant and surprising. The exact result of a dose of lymph given in any case cannot be accurately foreseen, and one must be prepared for all kinds of vagaries while watching the phenomenon called reaction. Unexpected general tubercular deposits or idiosyncrasy may develop a dangerous condition of collapse after a minimum dose of one or two milligrams, while a large dose may not at once manifest its effect, but even when cautiously proceeding a startling condition of things may develop. In my experience, however, these unpleasant surprises have not occurred where the precaution was taken to permit normal temperature to be resumed before repeating the dose, a rule which Koch himself emphasizes. As you all know, the temperature after injection varies greatly, and it is important to remember that the curative process may proceed in spite of these variations and during them. I have seen good results following injections which in some cases caused hyperpyrexia and in other cases as much

as two degrees subnormal temperature. Be it one extreme or the other, anything like accumulative effect is avoided by waiting until the normal point is again reached ; yet throughout its administration there is no remedy in our hands to-day which we require to watch so closely in its action as this one. Its cardiac toxic effect is the consideration surmounting all others in importance. The other general disturbances of minor importance are almost beyond reckoning, and to enumerate them would be tedious ; suffice it to say that any system in the body may develop evidence of the lymph's effect upon it. Two months ago renal disturbance was thought to be a frequent complication in this treatment, but my experience has shown such to be a comparatively infrequent complication. In the hundreds of cases which it was my privilege to study, and where the condition of the urine was faithfully watched, a few instances of a cloudiness in the excretion was occasionally produced, but only in one case did I see a serious quantity of albumen passed, amounting to about 20 per cent. This condition passed off completely in three days, making it evident that the trouble arose from congestion of the kidneys due to heightened blood pressure in the glomeruli during reaction and not from any lighting up of tubercular deposits in those organs, as it was feared. Barring on this point, I might quote the opinion of Sir Morel Mackenzie, who told me he was convinced, from what he had seen, that we need not fear renal trouble in this connection.

In *lupus*, the good effect of the remedy is now so well established in Europe that little reference to it is required from me. Six weeks ago, however, from what I saw in London of the action of the lymph on diseased tissue of this nature, I felt persuaded that if the most skeptical, prejudiced and biassed mind, in watching the progress of *lupus* towards cure under this remedy, was not convinced of the brilliant, almost immediate results, then there exists nothing in the healing art that can ever be convincing to such a mind. The question as to subsequent recurrence of the disease is not what I allude to here, but the positive and rapid improvement, causing, in the space of a few weeks, a putrid, ulcerating mass of rottenness to become a smooth, cicatricial surface, without a nodule of ulceration remaining. This much is conceded for the remedy, per force, because the results have been so quickly attained in relation to parts that were readily observed during the progress of the case that cavil is now beyond reach. The only question here is one of subsequent recurrence, and that question the gratified patients who have been cured to this extent are quite willing to leave the future to deal with, their present condition being such a pleasing contrast to that which afflicted them for many years past. The worst case

of this disease which had been treated by Koch's remedy either in London or Berlin is the only one that I will specially refer to, and is as follows:—

Charité Hospital, Berlin.—Jäger, aged 28, a man of good physique and good family history, suffered from lupus for many years. On entering hospital the diseased tissue extended over both cheeks as high as malar bones and outwards some two inches beyond angles of each jaw, downwards over lips, chin and neck to pomum Adami, nose eaten away to bony septum, and lupoid tissue extending upward over remaining nasal structure to lower border of frontal bone,—in fact, the face presented a suppurating, ulcerating, putrid mass, emitting such a horrible odor as to make his presence in the ward unsupportable had it not been for the aid of antiseptics and deodorants. Treatment by Koch's lymph alone was begun on 9th December last by injection of one centigram. Reaction followed in five hours, with temperature of 103° , pulse 112. Three days after, on repeating the same dose, about similar results followed, and this happened until the fifth dose was given, when, instead of fever following, a subnormal temperature was caused. By increasing the dose one-half a normal temperature was reached; again, on giving double original dose, viz., 0.02, temperature became subnormal. This was on 23rd December, and the Christmas holidays interfering, the patient received no further treatment until the 29th December, when 0.03 c.c. were given without reaction. At this time, in spite of the intermission of about a week in treatment, the appearance of this patient was so remarkable in contrast to his condition on entering that one could not be otherwise than delighted at the wonderfully good effect produced. The last time I saw and talked with this man only a number of isolated nodules of ulceration remained, and I know from experience in less aggravated cases that a week or two more would leave his face smooth and practically healed.

In the same ward of the "Charité" another case was quite cured where the nose was half gone, while the face, hand and arm had been badly affected, there remaining only the smooth, bluish cicatricial surface where formerly, for twelve years, a distressing condition existed. In private talks with these patients, they assured me that for the chance of attaining such good results they would be willing to undergo the worst phases of reaction and any attending unpleasantness.

Are not these results that call forth one's admiration? Suppose we admit that a recurrence of this disease is possible, even probable, and up to the present time little evidence is afforded to support such a conclusion, look at these patients to-day who have undergone years of misery of the most trying

kind both to themselves and relatives. They would almost give their right hands for such relief as has already been afforded, and I would only add, briefly, that my conviction is, the relief afforded by this remedy, even in reference to the disease of lupus alone, is a godsend to humanity, and worthy the highest praise we can bestow upon it. Minor cases of lupus which I watched at King's College Hospital, Sir Morel Mackenzie's Hospital, and elsewhere, cases affecting the larynx, face and limbs were so benefitted, that such men as Sir Joseph Lister, the specialists Lennox Browne and Mackenzie, Mr. Watson Cheyne and others, all expressed themselves to me as having the greatest confidence in the treatment.

The scope of this paper will not permit me to furnish one fractional part of the evidence collected in proof of the efficacy of the lymph, while a comparatively short paper would contain most of the evidence against its use. That death has been directly due to the use of the lymph is beyond question, but in the half dozen autopsies I witnessed after Koch's treatment the post-mortem evidence was overwhelming that in such cases it was worse than useless to apply this or any other remedy in the hope of cure, or even improvement.

In *tuberculosis of the lungs* it is already established that, far from being applicable to every case of this disease, it is decidedly injurious, and hastens the end in greatly advanced cases with large cavities; on the other hand, both London and Berlin afford us abundant proof that in selected cases it is remarkably beneficial. My notes show that in most instances where moist rales and other evidences of tubercular deposit existed in both apices, extending over both back and front of chest, with the usual accompanying signs of progressing tubercular disease, such as cough, expectoration, night sweating, emaciation, loss of appetite, dull percussion, etc., these conditions have been changed remarkably, and in a shorter time than any other remedy was ever known to afford. This change meant, briefly, a decreased expectoration and lessened cough, cessation of sweating, gain of weight and good appetite, a clearing up of the moist rales with clear percussion and, instead of bronchial breathing, a more vesicular murmur.

These improved conditions have occurred in some cases after six to eight weeks of treatment.

That incipient cases lose weight, and some advanced cases gain flesh and improve, has been confirmed by my personal experience. The explanation is probably to be found in the local reactive process attacking the living tuberculous tissue, and separating it from the normal lung tissue in the former, producing febrile conditions, which add to the mild septic fever induced by the lymph.

It has been demonstrated by Leyden that the febrile reaction is accompanied by increased conversion of albumen and increase of urea and nitrogen. The general system must suffer in its effort to compensate the increased tissue metamorphosis until the balance is restored.

The gain in some advanced cases, with cavities not in active condition, may be accounted for by the probable absence of living tubercular tissues at the time, this having been extruded by previous more or less long existing destructive action.

The walls of the cavities are fortified and stimulated (as was seen in some autopsies), suppuration is inhibited, septic absorption is prevented, the appetite is improved, cough and expectoration diminished, every condition enhancing nutrition is favored. This explanation may also clear up why, in active cavities, the lymph treatment is detrimental. The system is so depreciated by hectic fever, etc., that it is incompetent for compensatory action. Here great judgment is required. The pulse and temperature must supplement the physical signs in pointing out the proper treatment.

Although an increase of the bacilli occurs after the first injections, this passes off in most instances as the cases progress, and few are discoverable later; but this course, although the usual one as regards bacilli, can by no means be looked upon as typical.

One case I saw in Charité Hospital, Berlin, where phthisis pulmonalis developed after typhoid fever, and patient gained, when this treatment was begun, just 13 lbs. in two weeks. This was looked upon as phenomenal, it is true, but he continued to gain steadily, though more slowly, in the following weeks during which I saw him. His cough had quite left him, and although looking pale and anæmic, he assured me he felt about as well as ever, and hoped soon to go home.

At a recent meeting of the Berlin Medical Society, Dr. Frenkel read records of the encouraging results in general improvement, a general diminution of dullness over the infiltrated areas, and in many cases a prospect of cure by Koch's remedy. Up to the time I left Berlin few cases had yet been discharged as cured from the hospitals. I had the good fortune to see one case of a youth, aged 18, who was treated in Dr. Cornet's private klinik, and who had, the day I saw him, received his last injection previous to being sent home. The lymph had ceased to affect him, although at first the reactions were marked. He said that his trouble began three years previously, and although his symptoms were not of an aggravated kind, his case was quite pronounced. He improved rapidly under the treatment, so that eight weeks later he was allowed to return home, with instruction to

report in a month for another test injection. In his case I could not conveniently ascertain the action of bacilli under treatment. Weight, strength and appetite were restored satisfactorily in every way. Cases of incipient phthisis, it is considered, take five to six weeks, and bad cases three to four months for satisfactory treatment. On the other hand, a young woman in Dr. Krause's clinic told me that she was worse after six weeks of Koch's remedy, and intended going home next day. A young man in a different ward of the same clinic expressed himself in the same terms. These were both cases with good-sized cavities, and the attending physicians were rather hopeless regarding them. Another case in London said that he never had night-sweats until beginning this treatment, and blamed it accordingly. Still another had such severe reaction that she feared death and would not submit to the injections again for any consideration; and so from time to time one would meet occasional cases which discouraged treatment, but these were certainly the small minority. In advanced cases no good can be looked for with any confidence. Distinct contra-indications for the Koch treatment are great loss of strength, amyloid or other degeneration of tissue, albumen, urea and cardiac complications of a serious nature. Koch does not regard slight heart disease as an obstacle, the pulse being increased long before the rise of temperature. I have seen hæmoptysis caused by the lymph in several instances, but after waiting three or four days and no further indications, treatment was resumed without bad effect.

About the beginning of last December the results of lung treatment by the lymph at both City of London Hospital for Consumption and at Brompton Consumption Hospital were most encouraging, as far as they had proceeded, and this state of things I found fully confirmed in returning through London about a month later. In laryngeal phthisis under Sir Morel Mackenzie, and in cases of local tuberculosis under Mr. Watson Cheyne and Sir Joseph Lister at King's College Hospital, further experience has not altered, but confirmed, the confidence these gentlemen have in the treatment even in the face of occasional failures.

On 21st of December last Dr. Cornil of Paris gave his dictum decidedly against the use of Koch's lymph, and a copy of his statements was published in the London *Lancet* of 3rd January. He said what is generally conceded in regard to advanced phthisis with large cavities, that this remedy is worse than useless, and also that it is not applicable to acute or pneumonic phthisis, finishing by the statement that in incipient chronic tubercle its effect was doubtful. In passing through Paris recently I found this observer had greatly modified his views, and that the French physicians, including M.

Huchard, who have had opportunities of testing the lymph, were now giving evidence much more in accord with records furnished elsewhere. As against this we have a telegram published recently from Paris that Prof. Grasset had a patient die while under the Koch remedy whose case was not advanced tuberculosis. These are the meagre details of the case, and they are published broadcast, while the scores of successful cases are only recorded in medical journals. Yet even in this case we might, if we knew all, have one parallel with the girl at Innsbrück, where, although it was believed tubercular disease was little advanced, the autopsy revealed a general disseminated tuberculosis. Again, the case reported from Buda-Pesth of advanced phthisis complicated with diabetes mellitus, could not have been reasonably expected to end otherwise than it did. In these cases the fatal result has been due to the absorption of the products of the necrotic process set up by the lymph. On the 2nd January telegraphic reports from Madrid gave good results in treatment of leprosy with the lymph, and since that time we know that in New York some good work has been done in connection with this disease. On Jan. 2nd Mr. Watson Cheyne had been summoned to St. Petersburg to treat some prominent cases of leprosy with lymph. In Hamburg the treatment of tubercle was carried on effectively at the large general hospital there, and the results were most encouraging. All conditions and stages of phthisis pulmonalis were treated, consequently ill effects presented themselves as well as good. In cases that were not too far advanced the patients showed unmistakable signs of benefit. At first the effect of reaction was loss in weight and strength, but that was very temporary, for a permanent gain in strength and flesh generally followed, with a relish and desire for food previously unknown. Owing to the fact that the good effects of this remedy are mostly confined to cases of the early stages of consumption, and to the fact that many cases in this condition, when removed from the hardships of their everyday life to where they are warmly housed and abundantly fed with what is wholesome and nourishing, frequently improve, it has been asserted that the effect of Koch's lymph is really secondary to the effect of the improved hygienic surroundings. Against that assertion we have emphatic statements from most of the leading medical men of our generation in praise of the remedy, and these men are well known to give stint praise where it is not merited. I think it may safely be said that this remedy, to be successfully handled, calls for a more accurate estimate of the patient's physical condition than any other known means of cure, and several days' careful observation of the patient's condition is a necessary preliminary to treatment; a rule that is without exception.

Then the continuance of this strict observation during reaction is as called for as the treatment itself, and this work must be carried out by competent trained assistants in order that every detail in the progress of the case may be noted. When, as in this treatment, the temperature has to be taken every two hours, it would be unwise to trust to the assistance of a patient's relatives as a rule.

In *local tuberculosis*, the results are regarded as generally beneficial. As in lung tubercle, so it is here foolish to look for markedly good results in every case treated. We are fairly well able now, however, to indicate from experience thus far afforded what kind of cases are most amenable to this treatment. In cases of chronic enlargements of joints, I have seen, after the subsidence of reaction, a decided diminution of the morbid material, but surgery must still hold its own in such cases. In chronic enlarged strumous glands remarkably good results have been produced after two weeks treatment. One case alone in Mr. Watson Cheyne's clinic at King's College Hospital would almost appear to establish the potency of the remedy in an unmistakable way. Two injections entirely cured several chronic suppurating sinuses in the hand and arm, besides reducing by half a mass of suppurating glands with burrowing sinuses which extended in a semicircle from ear to ear. In Paddington Green Hospital for Children, the dissolution of swollen glands, healing of ulcers, decreased discharge and healing of sinuses, all testified to the efficacy of the lymph. Again, a case of chronic tubercular diarrhoea in the Charité Hospital, which had resisted every remedy they had given, yielded in about a week to the lymph. No other remedy being employed while the lymph was given, it was at least reasonable to suppose this agent effected the cure. The case progressed well subsequently under the same treatment.

In *laryngeal tuberculosis*, I saw some excellent results without the evil effects that were dreaded so much at first when it was known the reactions were accompanied by various oedematous conditions. In Krause's clinic some interesting throat cases were treated with good effect. One instance in this clinic where both laryngeal and lung tubercle were well developed I would like to bring to your notice briefly. Wende, aged 38, fair complexion, medium height, good family history, merchant, had symptoms of lung and throat trouble two years. On entering hospital the records show that he had a severe cough with purulent sputum, smothered breathing, moist rales, and dull percussion extending from apices of both lungs as far as fourth intercostal space; on left side, a subclavicular cavity was found. Body showed general emaciation, and night-sweating

was troublesome. Voice very hoarse, and a chronic laryngitis existed, with infiltration of left vocal cord. Presence of bacilli in considerable amount demonstrated. Patient given full diet and put on lymph treatment by injection of 0.001 c.c. This small dose caused temperature 103° , pulse 112, and respirations 40. This temperature subsided, but rose next day to 102° , again becoming normal the following day. Next injection, given 48 hours after the first, was increased to 0.0014 c.c., or an increase of about half a milligram. This gave sharp reaction, temperature rising to 104° F. in about six hours, then dropping to normal, and next day rising to 103° and subsiding. The doses were gradually increased until, in six weeks, he was receiving 0.075 c.c. Results: night-sweats arrested, laryngitis cured, improved percussion, diminished rales, patient claims to be greatly better and as cheerful as possible regarding his condition, cough much less, formerly could not lie on right side, now comfortable in any position. The hoarseness was still marked, but the generally improved condition of this patient was not only most gratifying to himself but satisfactory to the physician, for the case gave promise of best results even in the presence of fairly well advanced disease. In taking this patient's private address he promised to write me in a couple of months regarding his health, for he was quite sanguine that about three months of the same treatment would enable him to work again and return home.

At the Throat Hospital, Golden Square, London, some excellent work was done in lupus of larynx and laryngeal phthisis. The case of a boy was interesting, who had entered with dangerous oedema resulting from lupus of larynx. Here tracheotomy was performed and Koch treatment begun. In four days the intensely red infiltrated condition greatly subsided without any sloughing; the boy could swallow and breathe comfortably, and in some eight days wanted very much to go home, believing himself quite well enough to be looked after amongst his friends. Another severe case of lupus affecting both throat, lips and nose showed great improvement, while another of laryngeal and lung tubercle showed great benefit after two injections. Here a marked hypertrophy of right ventricular band had almost disappeared, although some swelling remained. Later on the moist rales in lung were appreciably lessening and an encouraging improvement generally manifest, but I feel that this summary of my notes has already occupied too much time, and I will close with a few facts regarding the *diagnostic value* of the lymph.

Although the remedy has been shown to be most insidious in attaching itself to tubercular tissue generally, this quality has been proved by no

means invariable, for records are given where no reaction took place in the presence of undoubted pulmonary tubercle after the injection of 1 to 10 milligrams. Again, fatal result has followed in some few instances from a minimum dose where the case was supposed to be incipient phthisis, but where the autopsy revealed unsuspected deep-seated cavities. Of the half-dozen post-mortems witnessed by me in Europe after this treatment, in every case the condition of the lungs was found to be such as would not warrant us giving the remedy in our present knowledge of its effects. In every case the tissues were either permeated generally by large tubercular deposits, some caseous, others softened into areas of pus, or the presence of cavities, large and small, have determined the fatal issue. Another factor very evident was the frequency in these cases of great emaciation and debility, such as would deter a cautious man from applying so powerful a remedy in even the smallest doses. The intravenous method of injecting the lymph, as used by Barcelli in Italy, and which produced reaction when the hypodermic method failed, has not been done to any extent in Berlin, London or Paris. As bearing on diagnostic value, I will furnish the outline of a case treated in Berlin. It was believed by the hospital surgeons to be cancer of soft palate, pharynx and tonsils. An injection was given experimentally with no expectation of reaction, but, contrary to the accepted views, a severe reaction followed. The affected parts within sight became swollen and quite red from congestion. In two days a sloughing condition presented itself over same surface, which sloughs were in time expectorated, leaving red, glazed patches behind, and in two weeks the throat was practically healed, while patient's health generally was greatly restored. Another surprising incident occurred under Dr. Heron at Victoria Park Hospital. A B, aged 18, thought to be a case of anæmia, and non-tubercular, received full injections—viz., 0.01 c.c.—to compare results with tubercular patients. To the doctor's surprise she reacted to a temperature of 101° , with swelling and pain in both knee joints. This temperature fell next day to 97° , then rose to normal. The second injection given was 0.005 c.c. instead of 10 milligrams, and this was followed by a temperature of 103° in $16\frac{3}{4}$ hours, with no pain or swelling of joints. Without further detail, suffice it to say that this patient was treated until reaction was nil in response to gradually increasing doses. Dr. Heron was quite satisfied that this was a case of tubercular affection which in time would have developed itself. In a non-tubercular person the dose of a centigram will cause a passing effect only; in this case no suspicion of tubercle could be based on any existing symptoms.

If I had dared encroach further on the Society's time, I would have given in detail the latest phase of the Koch treatment as carried out at the hospital in Moabit, a suburb of Berlin. I refer to a few cases where resection of the ribs has been done to permit of cleansing out lung cavities, cauterizing these cavities, and local application of lymph thereto. Prof. Sonnenburg, who has the surgical wards in the Moabit hospitals, gives an elaborate account of these operations in the last *Deutsche Medicinische Wochenschrift* and their results, which are certainly satisfactory up to the present time. For the technique of the operation and the details of the work, I would refer those interested to that journal. The surgical skill combined with the precision in medical diagnosis, demanded by such operations, precludes procedure of this kind outside of large hospital centres, but the Koch treatment outside of this phase of it can be creditably undertaken by the general practitioner who will assume the labor of clinical experience, and so acquire that knowledge which alone can qualify him.

Whether tuberculosis will become a radically curable disease remains for clinical experience to prove. Time must be the arbiter. But while awaiting its decision we must not lose sight of what has already been accomplished. Tuberculosis is not a local disease, else the lymph would seem to be almost a specific. Its silent emissary, the bacillus, may secrete itself in parts distant from its apparent attack. If the lymph were endowed with the power of searching out and attacking the bacillus, as it so surely does tuberculous tissue, the battle would be won. That this fluid is a potent agent, its effect as above recorded fully demonstrates; the vital forces must still be brought to bear upon the expulsion of the *debris*, whose presence is a constant menace, which demands the continued influence of the agent to protect living tissues from reinvasion.

While we thus have a most potent ally to the forces which modern medicine has not unsuccessfully marshalled against this dread disease in the past—viz., fresh air, exercise, diet and hydrotherapy—we must still depend upon these for establishing that resistance to the disease which they have so often afforded us in coping with phthisis.

Koch's method was born of reason, of logical deduction; it must be nurtured and developed, and applied likewise if it shall prove a permanent beneficence. If prolonged clinical test secures for the lymph the therapeutic position it bids fair to take, as *magnum donum dei*, medicine will have struck the first blow upon the chains forged upon it by the empiricism of which it is born, and its onward march to the goal of scientific precision may be deemed fairly inaugurated.